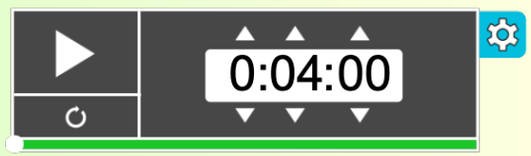
Circuits	**Internal resistance practical**

Learning objectives	**MUST (C)**	Recall the meaning of internal resistance and how it is graphically determined
	SHOULD (B)	Set up a circuit correctly, and take readings, to find the internal resistance of a potato
	COULD (A/ A*)	Suggest errors or inacurracies in the method

STARTER: Why is the emf of a battery different from the measurement on a voltmeter put across its terminals?

EXTENSION: What will the difference depend upon?



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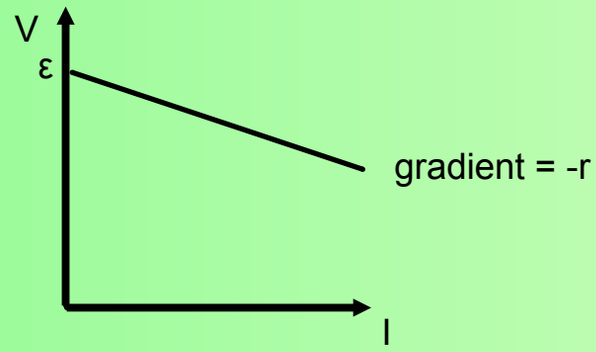

$\varepsilon = V + Ir$

$V = \varepsilon - Ir$ ε and r are constant, so:

V on y axis, I on x: m is -r and c is ε

Practical: set up:

electrodes of two different metals in the potato, in series with an ammeter and with a resistor, attached with crocodile clips.

Voltmeter connected to the electrodes in the potato.

Record the voltmeter and ammeter readings. Change the resistor, take the new readings. Finally, graph V against I to find the emf and the internal resistance.

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Plenary: a typical AA cell will have a 1.5 V emf and approximately a 1Ω internal resistance.

How does the potato compare?

Extension: A student connects up a small filament lamp (assume resistance of 50Ω) to a cell, and then to a potato. How will the potential difference across the lamp differ between these two methods?